

Bristol Composites UTC

A pipeline of innovation – from Bristol Composites Institute to Rolls-Royce

Supported by



The partnership between Rolls-Royce and the Composites University Technology Centre (UTC) at the University of Bristol, cultivates innovative, industrially focused engineers, who become valuable recruits into the aerospace and technology sector.

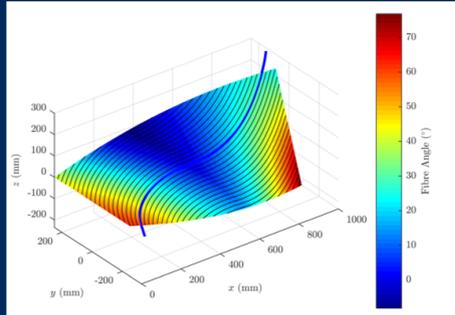
Sponsoring the Composites UTC research programmes enables Rolls-Royce to leverage a fresh perspective on infant technologies. Technology transfer is a common output of this partnership between academia and industry (see article on 3D woven multi-scale modelling tool), but it also offers graduates the opportunity to potentially work at one of the world's leading industrial technology companies.

Dr Matthew Thomas is one such recruit, who not long after graduating from the UTC joined Rolls-Royce as a Process Modelling Engineer. Dr Thomas explained why he got the job: ***“Because of undertaking my PhD in the UTC I’m grounded in a sound understanding of Rolls-Royce’s methods and requirements. It might sound cheesy,***

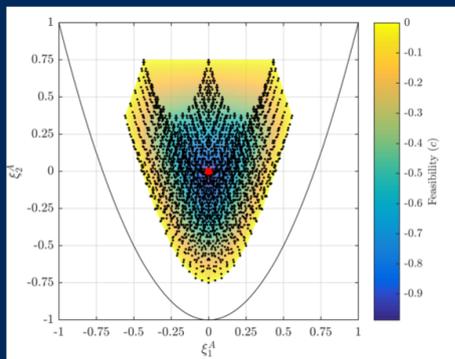
but they already knew I could see into the future to develop new techniques and improve methods.”

During his PhD, Dr Thomas developed methods to optimize the stiffness of composite fan blades and so improve the structural efficiency of this critical aeronautical engine component. This work involved what Dr Thomas describes as ***“blue sky thinking”***, which made the project ideal for pursuit in partnership with a university. Following up this work in a short post-doctoral position in the UTC, Dr Thomas applied his methodology towards a more realistic blade structure, developing its manufacturability.

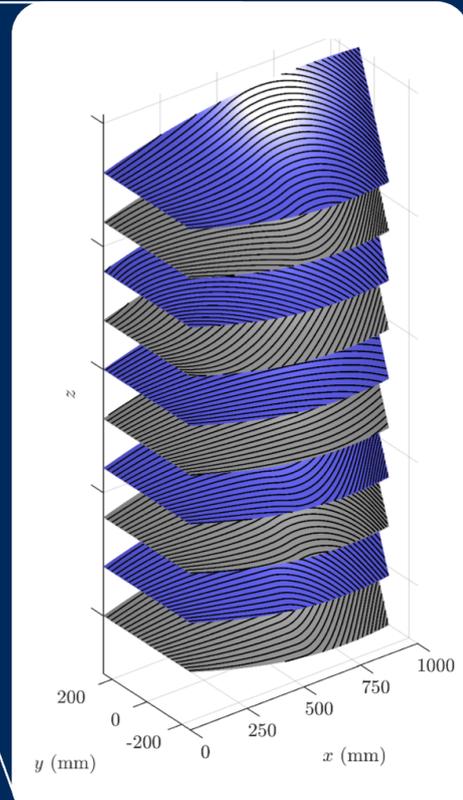
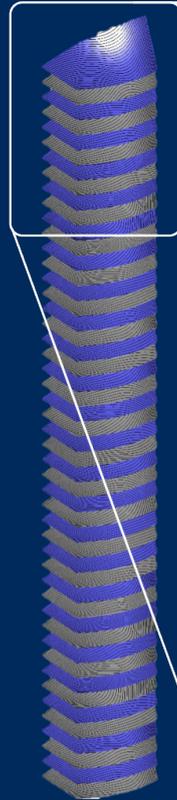
Matt Thomas' PhD Research



Numerical tools optimised variable fibre angle on complex curved shapes



Feasible regions identified in Lamination Parameter space



Variable Angle Tow plies are assembled to generate optimized structure

“Giving concepts that are high risk to the UTC is a good way to progress them,” said Dr Thomas, pointing out that Rolls-Royce benefits from the wide variety of expertise across their UTC network, including in what is becoming known as a Lightweight Structures University Technology Partnership with other universities.

Dr Thomas also found that working alongside but also slightly removed from industry gave him opportunity to think ***“outside-the-box”***. And he credits the freedom in direction afforded by his PhD in enabling him to accumulate a broad range of skills and knowledge that make him useful for the industry.

And industry was where Dr Thomas wanted to go. ***“I’d always been very industry driven, wanting to be closer to technology application and product development,”*** he explained.

Dr Thomas argues that bringing the abilities and inside knowledge nurtured in UTC graduates into Rolls-Royce is advantageous for the company and the wider UK supply chain. He is keen to see more follow in his footsteps.

Further information

Visit: bristol.ac.uk/composites/collaboration/utc

Email: work-with-accis@bristol.ac.uk